# A.A.A.S. BULLETIN

VOL. 3 AUGUST, 1944 No. 8

Published monthly by the American Association for the Advancement of Science. Office of Publication, North Queen St. and McGovern Ave., Lancaster, Pa. Editorial and Business Office, Smithsonian Institution Building, Washington 25, D. C., to which office all communications should be addressed.

Edited by F. R. Moulton and Sam Woodley.
Single copy, 10 cents; annual subscription, $1.00.
Entered as second-class matter at Lancaster, Pa., March 24, 1942, under the Act of August 24, 1912.

## Extra-Curricular Education

In the July issue of the BULLETIN it was shown that in the forty years from 1900 to 1940 the enrolment in public and private secondary schools had increased more than ten-fold and that the number graduated had increased in even greater ratio. It was also shown that the enrolment in institutions of higher education had increased more than six-fold. All this happened in the span of about one generation in which the total population lacked more than thirty million of even doubling, and in which the percentage of older people steadily increased.

If the discussion were closed at this point the picture would be far from complete, for the educative process is by no means limited to formal work in schools and institutions of higher education. It begins in the home and continues in work and in play, it expands in clubs, fraternities, fraternal orders, Sunday schools and churches, and it flowers in scientific societies and organizations formed specifically for cultural purposes. In some of these extra-curricular means of education statistics are available which prove that, generally speaking, they have kept pace with the enormous expansion of the formal means of education during the past forty years.

Consider the question of public libraries, for example. The New York Public Library alone contains more than four million books and pamphlets, and there are nearly 800 other circulating libraries scattered throughout our land. These are not idle stacks of books; twelve millions are borrowed per year from the New York Public Library for home use. In several American cities there are libraries containing more books than there were in the whole world a century or two ago. Our free public libraries contain more than 120 million books with a circulation of over four hundred million volumes a year, or an average of about three for every person in the United States.

In the matter of serial publications the statistics are equally astonishing. The circulation of daily newspapers exceeds thirty-three million a day, including Sunday, or an average of about one for every family in our country. There are in addition weekly newspapers with a circulation of about eighteen million, and other weekly periodicals with a combined circulation of more than fifty-six million, while the circulation of monthly periodicals has risen to the incomprehensible height of 140 million. Although much of the material appearing in these serial publications is trivial and ephemeral, and some of it worse, nevertheless they contain an enormous number of well-written articles on almost every subject of human interest. It is estimated that daily papers and nontechnical magazines now place before the general public each month more good science than was published in this country during the first fifty years of its existence.

An entirely new means of reaching the mind was born in 1900 when a patent was granted to Marconi for a tuned wireless system of communication. Broadcasting was initiated in 1920 with the transmission of press bulletins of the Harding-Cox presidential election returns. The inauguration of Mr. Coolidge as President, in 1925, was broadcast from 24 stations. During the winter of 1929–30 millions of persons listened to the conversations between Admiral Byrd's party at Little America, in Antarctica, and their friends in the United States. By 1941, there were 817 commercial broadcasting stations with gross revenues of nearly 170 million dollars per year, and it is estimated that in the twenty-one years between 1920 and 1941 more than thirty million American homes had been equipped with receiving sets for listening to the news of the world. Although electromagnetic waves carry

jazz and nonsense as well as symphonies and wisdom, yet tests have shown that millions listen daily to more good music than they heard in all their lives scarcely a generation ago, and that millions listen daily to competent speakers on science, literature, politics, war news and to debates by statesmen on current public questions. Only a generation ago our parents walked or slowly traveled miles to attend a lyceum or a chautauqua lecture; in the comfort of our homes we hear better things by simply turning two little dials. Our predecessors gave up a day's pay for an evening's entertainment or instruction; we get an evening of equally good entertainment or instruction for the cost of an ice cream cone or the wages of an unskilled laborer for five minutes. They boasted for years of having listened on some grand occasion to Dwight L. Moody or Robert G. Ingersoll; we count it a dull evening when we cannot hear the voices of comparable speakers. And the climax of this revolution in living which has burst on mankind with explosive suddenness is that through means for recording and reproducing sound that are now in common use the very voices of great men and women from this time forward can be preserved for all future generations.

There is another new avenue to the mind, the motion picture, which does as much for the eye as the radio does for the ear. It brings all life and action of the world into view. If anything moves too leisurely for effective study, as the opening petals of a flower, it can speed up the motion and compress the unfolding events of days into minutes. If anything moves too rapidly for the eye to follow, as the beating wings of a humming-bird, through so-called slow motion it can stretch out a hundredth of a second into a minute. In combination with the recording and reproducing of sound, motion pictures place daily before the patrons of fifteen thousand theaters, often in colors, the scenery, the pageantry, the news, and much of the theatrical art of the world. By means of the so-called animated cartoon it transforms the inanimate into the animate and recreates and glorifies the fairylands of childhood in the colors of the rainbow. These superlative avenues to amusement and education in all the sciences and arts are not open to the wealthy and privileged alone. On the contrary, about fifteen million persons a day, on the average, flock to the ten million seats that await them for an average admission that would hardly pay for the services of an unskilled laborer for a quarter of the period of entertainment for which it pays.

Let no myopic professional educator, using the word in the traditional sense, stick his head, ostrich-like, in the sand and assume that the things that have been mentioned are not fundamentally educational in the sense that they profoundly affect the minds of our youths and hence will affect the future of American life. And so will many other things that have not been mentioned, such as the Y.M.C.A. and Y.W.C.A., the Boy Scouts and Girl Scouts, the 4 H Clubs, the hiking clubs, the science clubs, and hundreds of other things boys and girls are organizing and doing spontaneously, often against repressions. Let not the dull drabness of our own past so paralyze our imaginations that we shall refuse to avail ourselves of the vast and varied opportunities for human improvement which science and technology and industry have been cooperatively making available. The world now wallows in misery and is red with blood because the possibilities of these unparalleled cooperative achievements have not been realized, while the hyena and jackal characteristics that linger in men have been snarling and fighting for the relatively carrion spoils of a day that is dead. —F.R.M.

---

## "The Middle Man"

A generation ago any discussion of a biological subject was likely to arouse suspicions that the writer was attempting to slip through surreptitiously a defense of the corrupting doctrine of evolution. Happily those days have passed. A few of the many comments on "The Middle Man," in the June issue of the BULLETIN, appear to have been written under the misapprehension that the article was a defense of the corporations which were used to illustrate recent developments in production that have important social consequences.

In "The Middle Man" Swift & Company and General Motors Corporation were neither attacked nor defended. They are old companies, well known all over the world, and served only as illustrations. They operate under the laws of the United States and of all the States, and of many foreign countries as well. Their reports, issued every three months, are open to everybody. Their annual reports are made up by wholly independent certified public accountants and are scrutinized by competent representatives of the Government. These reports are much easier to understand than such scientific generalizations as the doctrine of evolution, the electromagnetic theory, or the second law of thermodynamics. The fears of some scientists that the reports of

these companies contain some joker are due to the fact they relate to regions which scientists have not generally explored.

What actually was discussed in "The Middle Man" is the fact that when science and technology are combined with adequate business organization astonishing efficiencies in production can be achieved under stable social and political conditions. This country has had these conditions. It was pointed out that these companies, used only as illustrations, are not rapacious *individuals* but in essence partnerships of tens of thousands and even hundreds of thousands of persons, each of whom can dispose of his holdings at any time, on business days, within an hour or two without any questions being asked. Both of these companies are engaged in highly competitive businesses and hence can flourish only when they satisfy the public on a competitive basis. There are meat packing companies throughout the United States and there are several automobile manufacturers still surviving from among the many which could not meet competition.

As an illustration of the efficiency that organized technology has achieved, it was remarked in "The Middle Man" that Swift & Company, in 1943, supplied all its vast capital resources at an average cost of only little more than one cent for each dollar of its products purchased by the distributors. General Motors is now engaged exclusively in producing war materials on a scale and with an efficiency that is not being equalled in any other country. But before the war it would deliver at the purchaser's door a beautiful machine, consisting of hundreds of high-precision parts and thousands of other parts, made from materials obtained from many countries, for about thirty cents a pound. This selling price of thirty cents a pound included the cost of all raw materials, transportation charges, manufacturing costs, many kinds of taxes, salaries of management and profits.

Several persons writing about "The Middle Man" expressed fears that Swift & Company was making too great profits. The question was not discussed in the original article because it would have diverted attention from the points that were being made, but to do so is very simple. As was stated, Swift & Company did a business averaging more than $4,000,000 a day throughout 1943. To do this business required vast capital resources which the company supplied, in addition to the "know-how." At the close of the year the company had over $21,000,000 in cash (enough to last five days), $35,000,000 in Government securities, $124,000,000 in inventories of products in process or in storage to fill orders from the Government and others, and $97,000,000 in physical properties after they had been depreciated over the years to less than half their original cost. Neglecting a few million dollars of other investments, the company therefore provided $277,000,000 for use in its business. Its net return for the year 1943 on the $277,000,000 of capital in use was $17,400,000, or less than 6.3 percent. Its beef and pork departments operated at very substantial losses, the whole profit being from its other products and by-products. But the net income of the company in 1943 was considerably above the average. As recently as 1938 it had a net loss of $3,494,000 a year in which more than 60 percent of the corporations in the country had deficits, and its average net income during the past ten years has been only about 60 percent as great as in 1943. Whether this is reasonable is not now in question.

To focus attention on the financial aspects of efficiencies in production would be to misplace emphasis from a social to a money point of view. What is really of interest in these discussions is the opportunities these new methods give to the masses of mankind for exercising their higher faculties. If that high purpose of science is not kept steadily in view and put into effect, men will continue to prostitute the products of science to destruction of property, cultural treasures, human lives and eventually civilization itself.

---

### Dr. Edward Bausch

With the death of Dr. Edward Bausch on August 31 at the age of 89 years the Association lost one of its members of longest continuous membership. The records of the Association show that he became a member in 1877, or 67 years ago, a fellow in 1883, and an emeritus member in 1931. He was affiliated with the sections on Mathematics, Physics, and the Zoological Sciences.

In 1877, when Dr. Bausch became a member of the Association its membership was 953. On the day he died it stood at 25,514. The annual meeting in 1877 was held in Nashville, Tennessee, with a registration of 173 and at which 78 papers were read. At the meeting held in Dallas, Texas, from December 29, 1941, to January 3, 1942, three weeks after the United States had entered the war, the registration was 1851, and 1423 addresses and papers were listed on the general program. Even this great meeting was only two-thirds as large as the one held in Philadelphia a year earlier.

These figures roughly measure the increase in American science during the period in which Dr. Bausch was a member of the Association. He contributed greatly to the advance of the biological sciences by the design and manufacture of microscopes and other optical instruments of the highest order of excellence, and he and his associates in their development and production of optical glass made this country independent of foreign sources at a very critical time.

Dr. Bausch was born in Rochester, New York, in 1854, the city in which he lived all his life and to the institutions of which he made generous benefactions. He contributed greatly to science through his inventions and manufacturing ability, he prospered greatly with the expansion of science using his products, he regarded himself as a trustee for the rewards he had received for his work, and he disposed of them in the way he thought they would be most beneficial to science, his city and his country.

## Make Figures Talk

A reader of the BULLETIN, commenting on the educational statistics presented in the July issue, stated that figures representing large numbers are meaningless unless they are translated into something within the range of experience. The point is worth considering.

One of the statements made in the July BULLETIN was that in 1940 there were 1,700,000 graduates of high schools in the United States, the intention being to give the impression that a *very large* number of boys and girls had spent four years on acquiring education instead of working to produce necessaries of life. Few persons have had concrete experience with numbers as great as a million. It is vaguely a large number, and not so very large at that in these days of hundreds of millions and billions of dollars for this, that, and the other thing. Our boasting of our large expenditures apparently is shrinking large numbers, psychologically, rather than increasing our wonder at what we are accomplishing.

Evidently something in addition to mere numbers must be used to give large quantities reality in our minds. For example, the mention of 1,700,000 high school graduates gives us the picture of a lot of boys and girls, more than enough to fill the largest auditorium with which we are familiar. But let us imagine their being lined up, single file, to march by some reviewing stand from which we can observe them. If they were spaced at a distance of three feet from one to the next, the line would be a thousand miles long and it would take them, marching twenty-five miles a day, forty days to pass. This is the size of the army of graduates that our high schools have been turning out yearly. During their four years in high school these boys and girls have eaten three or four thousand tons of food per day, little of which they have produced. In clothing, shelter, books, amusements, etc., they have consumed several times as much of the products of the labor of others. All of this is being done, and also for the classes following them, without any serious burden on society, so efficient has production become.

Boston, Pittsburgh, St. Louis and San Francisco are great cities, throbbing with industry, commerce and all the activities of modern life, but not one of them contains half as many human beings as have graduated annually from our high schools in recent years. Illustrated otherwise, the ten Senators from the least populous five States together represent fewer persons in the U. S. Senate than have recently graduated annually from American high schools.

If the foregoing illustrations prove that bare statistics fail to present to our own minds the realities behind them, it may well be that we are not understanding our education and that it is not being conducted as wisely as it should be. It may well be that education is not more successful than it has been because too often we succeed in placing only statistical skeletons before students instead of the realities of the world, scientific, cultural, and social, of which they are a part.

## The September Scientific Monthly

The Associate Research Director of the Radio Corporation of America and one of his brilliant young research physicists have written the leading article on the electron microscope and how it can be used to help investigators solve problems in physical, biological, and industrial research. The possibilities of this instrument, now in commercial production, are amazing. The article is illustrated by typical electron micrographs.

With the approach of the Cleveland meeting, the article by Professor Miller on the development of the port of Cleveland assumes a special significance. Not far from Cleveland is French Canada where science has been developing in a characteristically French manner explained by Professor Dansereau.

Mammalian hairs may be too large for successful study under the electron microscope, but

under the light microscope their structures have been carefully studied. As Professor Hausman demonstrates, the microscopic structures of hairs may be used for their identification and, therefore, for the solution of numerous scientific and industrial problems, to say nothing of criminal identification. Everyone knows someone who stutters. The story of stuttering and what can be done about it are well told by Dr. Bender. Many scientists feel that they ought to do something about the sad state of society, but few actually make the attempt.

Professor Brody, although a specialist on the growth of animals, offers his suggestions for the improvement of the behavior of man. Professor Lamson has a different kind of axe to grind. He proposes that pharmacology proceed in the medical schools under the name "biotrepy" and confine its efforts to the study of the reactions of man and animals to drugs. Professor Holmes, a veteran biologist, presents his present reflections and speculations on how an organism becomes what it is—a scholarly analysis of organic growth.

**Table of Contents**

Electronic Microscopy. ..... V. K. ZWORYKIN AND JAMES HILLIER
Cleveland—A Great Lake's Port ..... E. WILLARD MILLER
Science in French Canada. I ..... PIERRE DANSEREAU
Applied Microscopy of Hair ..... LEON A. HAUSMAN
Do You Know Someone Who Stutters? ..... JAMES F. BENDER
Science and Social Wisdom ..... SAMUEL BRODY
Biotrepy—The Goose of the Golden Eggs ... P. D. LAMSON
The Problem of Organic Form. I ..... S. J. HOLMES
Science on the March
Book Reviews
Comments and Criticisms
Meet the Authors

## Paper for Publications

A glance at any magazine or newspaper will furnish clear evidence of a shortage of paper in the United States. As compared with that used in pre-war days, it is lighter in weight, often of lower quality, and crowded with type. The peace time requirement of paper of all kinds is about 15,000,000 tons per year. The goal set by the War Production Board calls for the making of approximately 16,000,000 tons of paper during this calendar year. Why, then, is there such an acute shortage as that which now exists?

The answer is that this is a war of paper, as well as of ships and guns and torpedoes and planes and bombs and tanks. With every soldier who crosses the ocean there must go about eight tons of equipment and supplies, most of which is protected from breakage and the elements by paper and paperboard. About one ton additional of equipment and supplies each month must follow each man in service overseas, with large additional use of paper.

It should not be supposed that only paperboard and the coarser grades of paper are useful in the war. Enormous quantities are used in packaging food, medicine, surgical supplies, scientific equipment and books. In fact, the Army and Navy buy about 2,800 items of procurements made strictly of paper and paper products. The scale of use is quite beyond imagination. For example, about 7,000 different sheets of blueprint paper are required to detail the production plans for a heavy bomber, and it is reported that 175 tons of blueprints were required for the plans of the battleship U. S. S. Missouri, which was launched not long ago. It is estimated that about 40 percent of all the paper being produced is required to meet the needs of our armed forces and war-products plants, and that about 33 percent additional is required by industries and services vital to production for war purposes, leaving only about 27 percent for purely civilian demands.

A large percentage of paper used for war purposes is of the lower grades which can be largely of waste paper. It is for this reason that the War Production Board has set a collection goal of more than 8,000,000 tons of waste paper for this calendar year. Of course, not all of the paper used by the Army and Navy is of low grade. From the draft cards of soldiers and sailors until their final discharge from the services no move can be made or material received, transported or disposed of without orders duly written out on multiple paper forms and preserved. And as for paper used in propaganda —only the use of radio is preventing its speedy exhaustion.

The shortage of paper presents a serious problem to the Association in the publication of *Science* and *The Scientific Monthly*. The quota of paper for 1944 set by the War Production Board for such publications is 10 percent, by weight, below the amount used in 1942. In the meantime the membership of the Association, and consequently the circulation of the journals, has increased nearly 10 percent. The quota is being met for *Science* by using paper of lighter weight and higher quality. In the case of *The Scientific Monthly*, the problem is being met by putting the same amount of type on fewer pages and also using lighter paper.

## "Commanding Our Wealth"

"Commanding Our Wealth" is the title of the address of the Retiring President of the Association, Dr. Isaiah Bowman, which will be delivered in Cleveland, Ohio, on Monday evening, September 11. This announcement should put an end to rumors that the Association is considering the cancellation of the meeting. For nearly three years the Association and the great affiliated societies which meet with it have refrained from holding a meeting in order to keep the burdens on the railroads as light as possible during the period of preparation for war. The civilian public has not been moved by such considerations but has thronged southern resort areas during the winter and northern ones during the summer and has visited relatives and friends without inner or exterior restraints. Scientists now feel that it is their clear duty to science and to civilization, to endure the inconveniences of assembling in order to take stock of present conditions and to prepare for the future.

---

## Sectional Organization of the Association

Since the interests of the Association extend widely over the fields of the natural and the social sciences, its work for many years has been organized under fifteen active sections and two subsections. Each section and subsection has a Secretary, elected for a term of four years, who is chief administrative officer of his section or subsection. Each section has a Chairman, elected for a term of one year, who is *ex officio* a vice president of the Association and delivers an address, usually a broad survey of at least a part of the field of his section, at the annual meeting nearest the close of his term of office. The vice presidential addresses are generally of great distinction, and fifteen such addresses each year for many years have made the annual meetings of the Association notable scientific events. There are no other regularly recurring occasions at which young scientists may hear and meet distinguished scientists who are specialists in so many fields. The addresses of the vice presidents are regularly published in *Science*.

The active sections of the Association, as they have existed since 1919 when an amended constitution was adopted, are as follows: Mathematics (A), Physics, (B), Chemistry (C), Astronomy (D), Geology and Geography (E), Zoological Sciences (F), Botanical Sciences (G), Anthropology (H), Psychology (I), Social and Economics (K), Historical and Philological Sciences (L), Engineering (M), Medical Sciences (N), Agricultural Sciences (O), and Education (Q). The subsections are: Subsection on Dentistry (Nd) and Subsection on Pharmacy (Np). A change in the descriptive title of Section L to History and Philosophy of Science is now under consideration.

### *Section Committees*

The activities of each section are under the general direction of a section committee, subject of course to the constitution and policies of the Association. In order that the activities of a section may have a considerable degree of continuity in long-range plans, not only is the term of office of the secretary four years but there are also four members of the section committee whose terms of office are four years, one elected each year by the section committee.

Long-term plans are not merely ideals but actual realities in the case of several sections, the most conspicuous of which is perhaps the section on medical sciences. General plans for the meetings of this section are outlined for several years in advance of the time they are to be held, the principal feature in each of them being a symposium on some important medical or public health problem. The participants in these symposia are chosen from the foremost authorities in their respective fields. These symposia, which in most instances have been published by the Association in its symposium series, include Tuberculosis and Leprosy, Syphilis, Mental Health, Gonococcus and Gonococcal Infection, Blood, Heart and Circulation, Relapsing Fever, Human Malaria, and Fluorine and Dental Health. These and other symposia volumes have been received throughout the world as important contributions to the advancement of science. Three reprintings of Human Malaria have been required for use by our armed forces.

A second function of the sections is to cooperate with the affiliated societies meeting with the Association. Each affiliated society has one or two representatives, appointed by itself, on the council of the Association. In order to facilitate cooperation between the affiliated societies and the sections, the council members representing the affiliated societies are *ex officio* members of the section committees of the sections in their respective fields.

### *Post-War Scientific Strategy*

There can be little doubt that a new era in science will follow the close of the war. Great periods of human history have sometimes followed wars—the Golden Age in Greece and the Elizabethan period in England, for example—

and periods of exhaustion and decadence also have sometimes followed. Everyone hopes that a great period will follow this war, and it should in a country like this whose full energies have been called upon but whose vitality has not been exhausted.

Science has played a very large role in this war and it is earnestly hoped that it will play an equally important part in the peace which approaches. In order to survey conditions and to outline general plans for the future, shortly after the close of the war the Association will hold a conference of the secretaries of the sections and of the affiliated societies which usually meet with it. In fact, it is probable that the secretaries of the sections and of the affiliated societies will constitute a continuing board of strategy for the advancement of science in this country, both directly in the Association and also in cooperation with other scientific organizations.

---

## The American Statistical Association

The American Statistical Association was founded in Boston on November 27, 1839. Its avowed purposes are to conduct meetings and publish scientific papers, to promote the improvement of statistical data and technique, to foster contacts among persons concerned with statistical information, problems and methods, and to encourage the application of statistical science to practical affairs.

The society has grown from membership of five persons in the founding group to 3,045 members on June 30, 1943. It is a private association devoted solely to the advancement of statistics. While it is not in any sense an official body, it has worked in close cooperation with government statistical agencies for many years in the pursuit of this objective. It has also worked closely with other private organizations and professional associations.

The society is neither sharply limited in membership nor narrowly restricted in scope or functions. Its interests extend over all the broad province of statistics. Its 3,000 members represent not only the various branches of the statistical profession but also the many fields within which statistics are used, including scientific research and the practical arts of government, commerce, industry, finance, labor, social service, and public health.

The program of activities is responsive to change, and is frequently adjusted and redirected in harmony with the evolution of statistical work. The continuing functions have been to foster improvements in statistical work, to suggest new studies and series, to advise and assist organizations that are responsible for statistical work; above all, to provide opportunities for a free interchange of information about new statistical developments and for that free discussion of these developments which tests their soundness and stimulates further progress.

There are four classes of membership: honorary members, fellows, regular members, and corporate members. Honorary members are persons distinguished in the fields of statistics or public service who have been elected to honorary membership by unanimous vote of the Board of Directors. Fellows are statisticians of established reputation who have been elected to fellowship by unanimous vote of the Committee on Fellows. Their number is limited to one hundred and fifty. Regular members are persons interested in statistics who have been nominated by one or more members and elected by the Board of Directors. Regular members or fellows who pay annual dues of not less than $25 are designated as contributing members. Corporate members are business concerns or corporations which have been elected to corporate membership by the Board of Directors.

The dues of regular members or fellows are $5 a year. Regular members or fellows may become life members by making a payment of $100. Corporate members pay annual dues of $100.

The officers are a president, several vice presidents, a board of six directors, a secretary and a treasurer. Each of the vice presidents of the organization represents a distinct field of statistical interest, and is responsible for furthering general activities in that field. At present that representation covers the fields: collection and classification of data and administration of statistical agencies; statistical and actuarial methods and technique, and the teaching of statistics; facts and methods pertaining to sociology, social welfare problems, and labor statistics; facts and methods related to biometry, vital statistics, psychology, and education; facts and methods bearing upon economics, and economic theory; facts and methods pertaining primarily to business; facts and methods pertaining to financial institutions; facts and methods pertaining to marketing. In addition to this vice presidential representation of interests, a Biometrics Section of the Association has been established in recent years, and it is countemplated that other special-interest sections may be created in the future.

One of the most important activities of the society in normal times is its annual meeting, which is held during the last week of December and lasts three or four days. There are addresses of general interest, sessions for the discussion of statistical research and technique, and round-table conferences on specialized problems. The opportunity thus provided for the first-hand exchange of professional ideas has been throughout the life of the society one of its greatest means of usefulness to its members.

Twenty-four chapters have been organized under charters granted by the Association in important cities in the United States and in Havana, Cuba. These chapters hold meetings at monthly or other regular intervals to discuss statistical, economic, and business problems. As the chapters usually include among their members the leaders in the statistical field in the areas where the chapters are located, they serve as focal points for professional consideration of state and local as well as more general aspects of such prob-

lems. Chapter groups from time to time engage in special projects, such as an "Index to Statistical Data in New York State Agencies" prepared by the Albany Chapter or a "Directory of State Statistical Agencies" compiled by the Harrisburg group.

The Association publishes a journal and a bulletin. A number of special publications have been issued from time to time.

The *Journal of the American Statistical Association* is a quarterly publication containing selected papers and proceedings of the annual meeting, articles on various statistical subjects, review of important books in statistical and related fields. It is sent to every member of the Association and to a world-wide list of subscribers. Each annual volume contains about 800 pages. A detailed index to the *Journal* from 1888 to 1939 was published in 1941.

The *Journal* is a most important means of bringing together the results of statistical work in many fields. It enables statisticians in each field to benefit from the experience of statisticians working in other fields. It helps all of them to keep informed of recent statistical progress. It is a very important means of accomplishing the purposes of the Association, for it reaches all the members and covers the entire range of their interests.

The *American Statistical Association Bulletin* is a quarterly publication which includes announcements, items of news, and informal discussions of professional problems.

Much of the work of the society is carried on by special-purpose committees. Through these committees, the society has constantly sought to encourage research, to perfect statistical procedures, and to stimulate the improvement of governmental and private statistics. The current scope of the committee work may be indicated by the titles of some of the committees which have been active during recent years. The list includes the Advisory Committee on the Census, the committees on Industrial Statistics, Labor Statistics, Price Statistics, Income Tax Statistics (with the American Economic Association), Statistics of Relief and Child Care, Statistics of Institutions for Mental and Physical Disorders, Census Enumeration Areas, Statistics of Delinquents and Criminals, Biometrics and Vital Statistics, Technique and Method, and the joint committees on Standards for Graphics and Development of Statistical Applications in Engineering and Manufacturing. The activities in 1933 and 1934 of the Committee on Government Statistics and Information Services (appointed jointly with the Social Science Research Council) resulted in the establishment of the U. S. Central Statistical Board, now the Division of Statistical Standards of the Bureau of the Budget. The most recently appointed committee was created at the request of the Secretary of Labor to review the Bureau of Labor Statistics' cost of living index and give the Bureau the benefit of its comments and suggestions. That Committee has issued a report entitled "An Appraisal of the U. S. Bureau of Labor Statistics' Cost of Living Index."

## Membership in the Association

### *Eligibility for Membership*

Membership in the Association is open to all persons engaged in scientific work, whether in the fields of the natural or the social sciences; to all amateur scientists, whatever their special interests; and to all who desire to follow the advances of science and its effects upon civilization. Members having made substantial contributions to the advancement of science are eligible for election as fellows.

### *Dues and Publications*

Membership dues are $5 per year, including subscriptions for the monthly A.A.A.S. Bulletin and either the weekly journal *Science,* now in its 100th volume, or *The Scientific Monthly,* now in its 59th volume. *Science* is a journal for professional scientists; the *Monthly* is a nontechnical journal for the intelligent public. The Association also publishes technical symposia and nontechnical books on science that are available for members at prices substantially below those to the public.

### *Organization and Meetings*

The Association was founded in 1848, with an initial membership of 461. Papers in its early programs were classified as either natural philosophy or natural history. Now its work is organized under 15 sections and 189 associated societies having a total membership of over 500,000. Its annual meetings are the greatest regular gatherings of scientists in the world.

### *Nominations and Applications for Membership*

Members may submit nominations for membership at any time, and persons desiring to become members can obtain membership application forms from the Office of the Permanent Secretary, the Smithsonian Institution Building, Washington 25, D. C.

## Changes of Address

New addresses for the Association's record and for mailing the journals *Science* and *The Scientific Monthly,* as well as the A.A.A.S. Bulletin, should be in the Office of the Permanent Secretary, Washington 25, D. C., at least two weeks in advance of the date when the change is to become effective.

## Officers of the Association

*President,* Anton J. Carlson; *Permanent Secretary,* F. R. Moulton; *General Secretary,* Otis W. Caldwell; *Treasurer,* W. E. Wrather; *Director of Publications,* F. L. Campbell; *Assistant Secretary,* Sam Woodley.

*Executive Committee:* Burton E. Livingston, *Chairman;* Roger Adams, Joseph W. Barker, Otis W. Caldwell, Walter B. Cannon, Anton J. Carlson, Arthur H. Compton, Kirtley F. Mather, F. R. Moulton, Elvin C. Stakman, and W. E. Wrather.